

balloon, S-20, damaged when it was forced down into trees near Reedville, Ky.

A new menace, nonmeteorological in character, was reported by some of the pilots: while they were sailing over the mountains of Kentucky and Virginia, several of the mountaineers proceeded to shoot them up. As none of the balloons was hit, it was evidently merely an admonition from these native sons for the pilots to keep on their way.

A very complete schedule of broadcasting weather information for the pilots was carried out with a high degree of success. From the log of the *Goodyear IV* we learn that messages and programs were listened to during the first night from stations in New York City, Cincinnati, Memphis, Hot Springs, and Los Angeles. On the 30th mention is made of reports from Chicago, St. Louis, and Pittsburgh. Van Orman in a telegram to the Chief of the Weather Bureau says, "The weather data furnished at Little Rock, also the flying and regular forecasts which were broadcast, helped us win the national race and establish new records. Every flying forecast broadcast was received, also 80 per cent of the regular forecasts. Please accept my thanks and convey them to the members of your Bureau who assisted."

In the table below are given some details of the race. It will be noted that the shortest distance covered by a contestant was 473 miles, with small increases in distance from one record to the next, except for the winner, who exceeded his nearest competitor by more than 200 miles. According to Ralph Upson, noted balloonist and starter

of the race, the previous record for balloons of this size was 305 miles; even the smaller *Skylark* exceeded this by more than 100 miles.

Name of pilot and aid	Entrant	Name of balloon	Place and time of landing	Distance
W. T. Van Orman... (W. W. Morton).	Goodyear Tire & Rubber Co., Akron, Ohio.	Goodyear IV....	8 miles SSE. of Petersburg, Va., 1:03 a. m. May 1.	848
Capt. H. C. Gray... (Lieut. D. Johnston).	U. S. Army Air Service, Scott Field, Ill.	S-23.....	7 miles N. of Mount Holly, N. C., 12:08 p. m. May 1.	635
J. A. Boettner..... (H. W. Maxson).	Akron Chapter N. A. A., Akron, Ohio.	Akron N. A. A..	7 miles NE. of Welch, W. Va., 7:45 p. m. Apr. 30.	627
Lieut. James F. Powell. (Lieut. James F. Early).	U. S. Army Air Service, Phillips Field, Md.	S-21.....	12 miles due N. of Hickory, N. C., 5 p. m. Apr. 30.	618
Herbert V. Thaden... (C. D. Williams).	Detroit Flying Club, Detroit Aviation Society.	Detroit.....	3 miles W. of Gulnare, Ky., 2:10 p. m. Apr. 30.	574
Lieut. Wm. A. Gray... (Lieut. R. Kiebert).	U. S. Army Air Service, Langley Field, Va.	S-20.....	Reedville, Carter County, Ky., 3 p. m. Apr. 30.	570
Svend A. U. Rasmussen. (Edward J. Hill).	Detroit Adercraft Club, Detroit, Mich.	Detroit Adercraft.	3 miles W. of Blaine, Ky., 5 p. m. Apr. 30.	566
Capt. L. F. Stone... (Capt. G. R. Oatman).	U. S. Army Air Service, McCook Field, Dayton, Ohio.	S-19.....	7 miles SE. of Heidelberg, Ky., 2:30 p. m. Apr. 30.	510
Walter A. Ham... (Robt. P. Lehr).	Walter A. Ham, Los Angeles, Calif.	Goodyear Southern California.	5 miles E. of Brodhead, Ky., 11 a. m. Apr. 30.	473
W. C. Naylor..... (K. W. Warren).	The Arkansas Gazette, Little Rock, Ark.	Skylark (pilot balloon).	4 miles N. of Crawford, Tenn., 11:30 a. m. Apr. 30.	410

551.578.1(794) NOTES, ABSTRACTS, AND REVIEWS

EXTRAORDINARY APRIL RAINS IN CALIFORNIA

The unprecedented rains in some parts of California in April, 1926, call for some mention of the attendant meteorological conditions.

On April 1, five days previous to the arrival of the rains, a weak cyclonic system was charted in W. longitude 150°; N. latitude 30°; associated therewith was an anticyclone, centered in W. longitude 160°; N. latitude 50°. The latter, being in the more rapidly flowing eastward drift of the higher latitudes, advanced to the Mackenzie Basin by the evening of the 4th. Meanwhile the more slowly moving oceanic cyclone had increased considerably in intensity and it continued further to increase, reaching its maximum development on the morning of the 7th in W. longitude 135°; N. latitude 45°. Twenty-four hours previously an offshoot from it had passed inland over California giving the general and heavy rains as above noted.¹

The oceanic cyclone on the morning of the 8th occupied practically the whole of the Pacific north of N. latitude 30° and east of W. longitude 170°; it also had encroached upon the continent as far as W. longitude 120° in Alaska and 110° in northwestern Mexico.

If, in the beginning, the position of the cyclone and anticyclone had been reversed, as is normally the case in that part of the Pacific, very little, if any, precipitation would have occurred in California. It is a basic maxim in the forecasting of precipitation in this country that the conditions are most favorable when the geographic position of the cyclone and the anticyclone is such that the former is to the southwest of the latter.

This position was reached on the 5th and 6th and although the centers of the two formations were separated by at least 30° of latitude the result was never in doubt

and was quickly foreseen by the San Francisco forecaster. The chief meteorological factor concerned in the causation of the rains in question was the relative position in time and space of the two barometric formations above described.

As has been pointed out, that position was the exact opposite of the one normally to be expected, viz, high pressure over the northeast Pacific in approximately, W. longitude 148°; N. latitude 32°, in April and it was this abnormal pressure distribution that led to the rains in California.

The fact that heavy April rains have occurred once within the 50-odd years of observation can not, however, be interpreted to mean that similar heavy rains will occur in the next 50 years. It is within the range of probability that several occurrences of heavy rains in April may be experienced in the next 50 years and on the other hand there may not be a single occurrence.—A. J. H.

551.578.1(265.1) RAIN SQUALLS OF THE ATLANTIC TRADE-WIND REGION

K. Knoch, in Publication No. 335 of the Prussian Meteorological Institute (Berlin), 1926) discusses certain aspects of the temperature and relative humidity observations obtained by the late E. Barkow on board the ship *Deutschland* in the Atlantic trade-wind region during June, July, and August, 1911.

The rain squalls are phenomena apparently not related to the ordinary trade-wind cumulus. They occurred between latitudes 25° and 20° N. with a frequency averaging 1.9 per day, 3 per day between latitudes 20° and 15°, and 2 per day between 15° and 10°. In the 5-degree belt north of the Equator the frequency was 1, in 0° to 5° S. it was 3, dropped to 1.1 between 5° and 10° S., rose to 3 in the belt 10°-15°, and to 4 per day between 15° and 20° S. These figures are based, of course, on

¹ Cf. Reed, T. R., p. 181 of this REVIEW.